

The present invention relates to a process for the manufacture of an easy open device for "Flow Pack" or similar packages with longitudinal seams and transversal closures, an opening device obtained through said process, and the package using it.

More specifically, it relates to a process for placing a detaching or easy open strip in packages with longitudinal seams and transversal closures [in] which, because of their current manufacturing characteristics, said opening is made by tearing, with the risk of spillage of the packaged product and subsequent destruction of the package. It could be said that package manufacturing techniques are divided into packages with and without longitudinal seams and transversal closures. The first are the so-called "Flow Pack" packages and the second are the so-called "portfolio" and/or wrapper packages.

Portfolio-type packages are produced by the movement in the machine direction of the already-printed packaging film, said printing generally being readable in the direction perpendicular to the film's movement. The product to be packaged arrives at the film perpendicularly to its movement, supported by disks on both ends. At the same time, a detaching or easy open strip is incorporated longitudinally into said film

These types of machines have cylinders that adjust the area where said detachable strip will be placed, but their degree of precision is relative, so there is generally displacement which affects the proper operation of said strip. Also, during the process of constructing the package, the free end for tearing said strip may not match up with the circumference it should describe. Consequently, when it does not close over itself, the tear is not clean. In some cases, said strip is not even where it should be. As indicated, once the package is constructed with its detachment strip incorporated, one frangible end is left free to open it. This free end, not attached to the rest of the package, is made with at least one cut in one side of the strip. If

there are two cuts to both sides, they may not be symmetrical because of synchronization problems, which makes a neat opening even more difficult to achieve. If this occurs, more force must be applied than that required for opening, which distorts it and entails high risk for the product and package integrity.

This type of package uses heat activated adhesive to seal the ends, because of which the product to be consumed can also be damaged, due to the pressure of the disks and the temperature applied, as in the case of packets of crackers, in which the first and last are generally damaged.

The undesired effects that may accompany the wrapping or portfolio technique, plus their hermetic closure, motivated the appearance and the increasingly frequent use of "FlowPack" type packages which, because of their transversal packaging characteristic, could not, until now, have an easy open device. There are two types of Flow Pack packages, those generated horizontally and those generated vertically, also called sacks.

In horizontal packaging, the product is positioned on the printed film which will make up the package in [a] direction parallel to the readable printing, because of which it must enter parallel to the machine direction, which means

- . It would use a longer strip, with the consequent higher cost
- . It would interfere with the heat seal areas, making [the sealing] difficult, acting as a potential contamination factor.
- . It would expose the entire packaged product without the ability to be re-closed, with the consequent product deterioration.

In the case of vertical or sack type “Flow Pack” packages (filled gravimetrically or volumetrically), the process is different because it is not

continuous. Its intermittent nature is due to the fact that one end of the package must be sealed and the longitudinal seam must be generated so that, when gravity causes the product to fall, it is confined in the package. Subsequently, the other end (where the product enters) is sealed, thus generating the base for the next package. The inclusion of a detaching strip has also not been used because of the problems previously set forth with respect to the conventional processes for inserting said strips.

Therefore, and in keeping with what has been set forth, at this time, there are no known processes for including detaching (also known as "easy open") strips in packages with longitudinal seams and transversal closures, commonly known as "Flow Pack."

Based on what has been set forth, the need to develop a process for the manufacture of an easy opening for these types of packages is clear, since at the current time they are opened only by tearing one of the ends or through the longitudinal seam (which can be located anywhere on the package). In the majority of cases, this causes spillage of the product because of the force needed to break the heat seal and, in some cases, destruction of the package.

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Another difficulty arises in the case of promotions or economy packs of any kind that include more of a product at the same time. In the case of wanting to package, for example, three packets of crackers for a promotion, double packaging is necessary. First, each product individually, and then grouping them in a single package, either with a wrapping film of sealed polyethylene or in a closed box. This is so because the difficulties mentioned with respect to the destruction

of the packages with longitudinal seams are aggravated even more in this case, since, if there were no individual packages inside the collective package, many products would be exposed, and, in the event of its destruction by tearing, significant spillage would result. Also, the cost of this double packaging is so high that, in the majority of cases, promotions do not achieve their expectations or objectives.

Therefore, the purpose of using the present invention is to provide a process for inserting a detaching or "easy open" strip in Flow Pack or similar packages with longitudinal seams and transversal closures, manufactured horizontally or vertically.

Another purpose is that said detaching strip be easy to detach.

Still another purpose is that the opening procedure not endanger the integrity of the package.

Yet another purpose is that the process for including a detaching strip not increase costs.

Figures 5 A to F show an easy open and closing sequence when the end of the detaching strip is not placed on the longitudinal seam of the Flow Pack packages.

Detailed description of the invention

As can be seen in Figure 1, referring to longitudinal (wrapping or portfolio) packaging machines, the packaging film (1) on which the product to be packaged is deposited (2) is moved, with printed face (3) down and readable perpendicularly to the machine direction. The product to be packaged enters through one side on a conveyor belt (4) perpendicularly to the machine direction, as indicated by the arrows. This process incorporates a detachable strip (5), which is attached to the internal (unprinted) face (6) of the packaging film (1). This detachable strip is continuously unwinding from the spool (8) so that, after the final cut, it will surround the entire perimeter of the package (7). Its final length is, in the majority of cases, not greater than 15 cm. This, of course, depends on the product to be packaged.

Figure 2 shows how horizontal Flow Pack packages are produced. The packaging film (1) is moved, with printed face (3) up and generally readable, parallel to the machine direction, as indicated by the arrows. At a certain point, the product (2) to be packaged is incorporated in the machine direction. Then the packaging film (1) is folded,

wrapping the product (2), and a longitudinal seam (12) is generated. This seam is preferably located in the center of the package, which is heat- or cold-sealed. The same occurs with the ends of the package (9), which are pressed, heat- or cold-sealed, and cut. In this way the process keeps mechanical elements from coming into contact with the product (2) to be consumed and jeopardizing its integrity. If the process included a spool (8) containing a strip (5), such as the one described in Figure 1, which is unwound continuously and whose detaching strip (5) is attached to the internal face of the package (3), an undesired opening area that would expose all of the product would be generated; it would also have to span areas that are sealed, which could result in product (2) deterioration.

Figure 2 shows a spool (8) with a rolled plastic siliconed carrier or liner (10) that has detaching strips (5) not longer than the width of the packaging film (1), which is the object of the present invention. Said strip (5) has adhesive on its printed face; this process is called "occluded printing." The ink is occluded because of the requirement to not expose the printed face to the package contents (7).

The siliconed carrier (10) is punched and, using an applicator head (not

shown in the figure), the detaching strips (5) are applied to the internal face of the packaging film (1) continuously, accurately aligned.

Said strips (5) must be thick and rigid enough so that, once the cut is initiated, the subsequent release of the material accompanies their detachment.

As indicated, these detaching strips (5) are placed along the width of the siliconed carrier (10) that supports them. This means that they will be deposited transversally with respect to the machine direction and perpendicular to the readable printing on the packaging film (1). The release area (17 ¹⁰figures 5 and 6) can be generated on just one face of the package (7) or on all of them (with total detachment of the portion of the package above said strip). The fact that the release area (17 figures 5 and 6) is not the total perimeter of the package (7) makes it possible to use an easy open/close element (11 Figures 3 and 5) that enables said package (7) to be closed for subsequent use, thus preserving the product to be consumed. This easy open/close element (11 Figures 3 and 5) can either be affixed to one face of said package (7) or inside said package (7) as a self-sticking label.

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Said detachable strip (5) can be positioned on any part of the package (7). Everything will depend on the type of product to be consumed. In the case of disposable tissues, it could be inserted in the middle of the package (7), but in the case of crackers, a position near one of the ends (9) would be suitable. Application is made with a standard aligning applicator head known in the art which, through the optical reading of a reference element on the packaging film (1) (not provided in the figure), indicates where said detachable strip (5) should be affixed.

Optical alignment is much more accurate than mechanical devices in relation to the aforementioned problem of displacement, with which the associated problems regarding release are also solved. The place where said strip (5) is to be affixed is previously input manually in the production line control logic (PLC), which in turn transmits the information entered to the optical reader, which activates the applicator head when said strip (5) must be affixed to the packaging film (1).

Figure 3 shows a packaging machine for vertical Flow Pack packages, also called sacks (7). Gravity plays an important role in this process. The film (1) moves vertically (see arrow), producing first a package (7) with a longitudinal seam (12) generated by

means of longitudinal clamps (22), a sealed lower end (13) generated by means of transversal clamps (23), and an upper end (14) originally opened by means of a shaping shoulder (21). Through it enters the product to be packaged, which is gravimetrically or volumetrically measured out through the hopper (21). The subsequent heat sealing of said upper end (14) by action of the transversal clamps (23) shapes the lower end (13) of the next sack, and so on. This process is not continuous, since it is necessary to wait for the package (7) to be filled in order to move on to the next. The purpose of the present invention is to participate in the packaging process through the previously-described spool (8), which has a siliconed carrier or plastic liner (10) that supports the detaching strips (5), which, by means of an applicator head (not shown in the figure), are affixed transversally to the packaging sheet (1) and aligned with a through cut (18) generated by the first cutting machine (24). Then the easy open/close element (11) is attached, also aligned and on the area of said cut (18), by means of another applicator head (also not shown).

Figures 4 A to C show an example of [the] opening sequence for the Flow Pack packages from the longitudinal seam. There are two small incisions (15) in said seam (12) where one of the ends (16)

When one end of the detaching strip (5) is not positioned on the seam (12) and, therefore, cannot be easily grasped except after ripping, it becomes vital to include an element to facilitate that task (Figures 5 A to F). Said element should be directly attached to that end of the detaching strip (5) and to the area of the through cut (18) to generate the release area (17). Part of this element's surface should be self-sticking to establish that connection, and the rest of this element's surface should be non-sticking so it can be easily grasped, as occurred in the case of the free end (16) of the detaching strip (5) described in Figure 4 A. This aforementioned easy open/close (11) element will be described below.

As can be seen in the sequence of Figures 5 A to F, for the best preservation

of the products which a package (7) contains, an easy open/close element (11) could be used on one of its faces (19) with the part of the surface that is attached blocking said through cut area (Figure 5B reference 18) and one end of the detaching strip (5). The other part of the surface of said easy open/close element (11) does not contain adhesive, so it can be easily grasped by the end user (Figure 5 A) and can begin the release area (17). When said release area (17) (Figure 5B) is begun, it extends to one side of the package 7 (Figure 5C), in turn generating an upper flap (20). When the opening of the package (7) (Figure 5D) is complete, said upper flap (20) folds over itself (5E) and over the release area (17) and then adheres to one of the faces of the package (7) (Figure 5F) using said easy open/close element (11) previously detached from the detaching strip (5).

Finally, the affixing of the detaching strips (5) to the internal face of the film (3) of the package (7) may be accomplished on line in real time via a spool (8) that is unrolled as the packages (7) are constructed, or off line, in which case the packaging film (1) is ready to be incorporated after the packaging process with the strips (5) included. This latter case involves unrolling the entire spool (8), affixing the strips (5) at intervals controlled by optical and/or mechanical reading,

and ultimately rewinding said spool (8).

Although the present invention has been described according to a specific implementation method, all persons skilled in the art will understand that various changes can be made and that equivalents can be substituted without departing from the true scope and spirit of the invention. In addition, many modifications can be made to adapt a situation, a material, a combination of materials, one or more specific steps of the process, to the purpose, the spirit, or the scope of the present invention. The purpose of all these modifications is inclusion in the scope of the claims attached hereto.

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